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(12) UK Patent Application (19) GB (11) 2 129 845 A

(21) Application No 8229302  
(22) Date of filing 13 Oct 1982

(43) Application published  
23 May 1984

(51) INT CL<sup>3</sup>  
E04H 17/00

(52) Domestic classification  
E1D 2036 505 LEKN

(56) Documents cited  
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GB 1089832

GB 1053272

(58) Field of search  
E1D  
E1G

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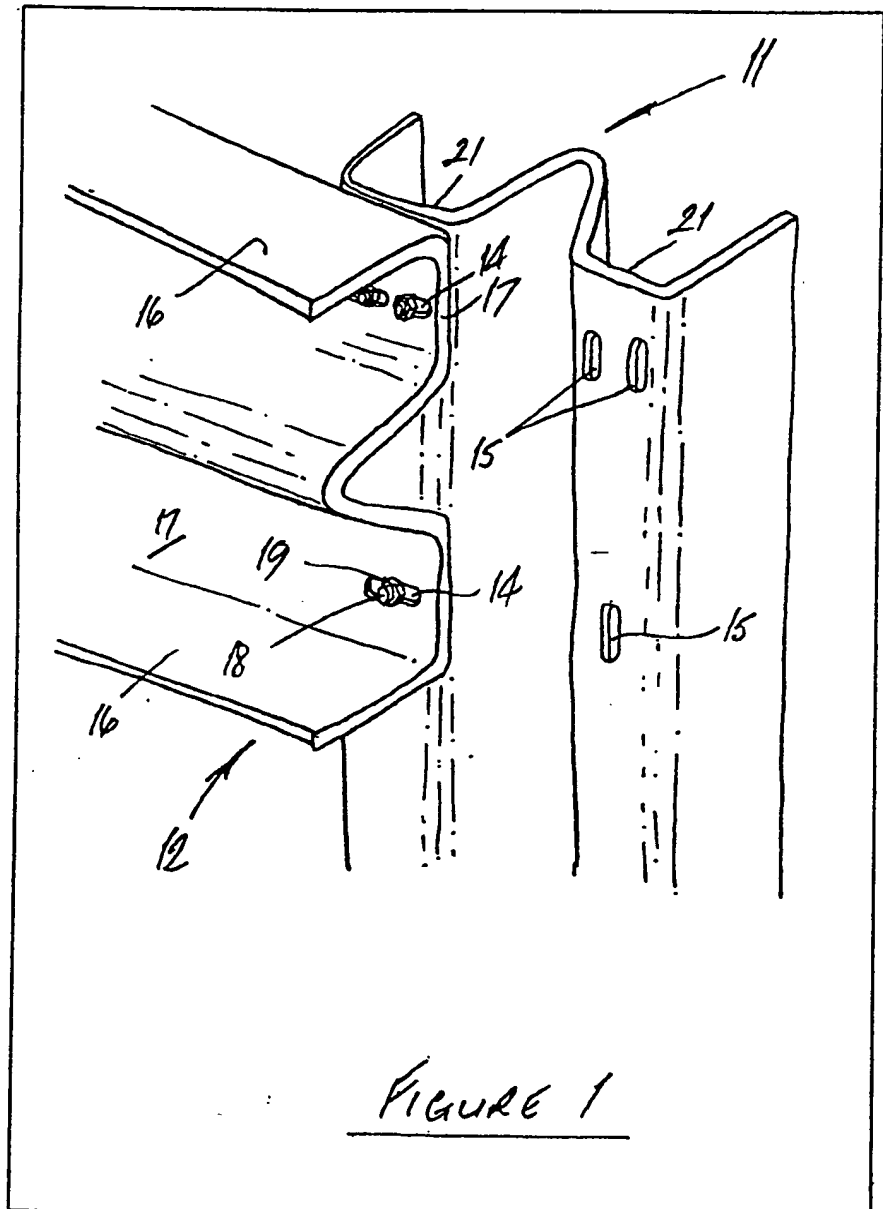
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(54) Post and rail fencing

(57) The posts (11) and the rails (12)  
are each made from W-section

lengths of channel and are joined by  
fastening the channels base-to-base.  
The channel may be of metal or of  
plastics.



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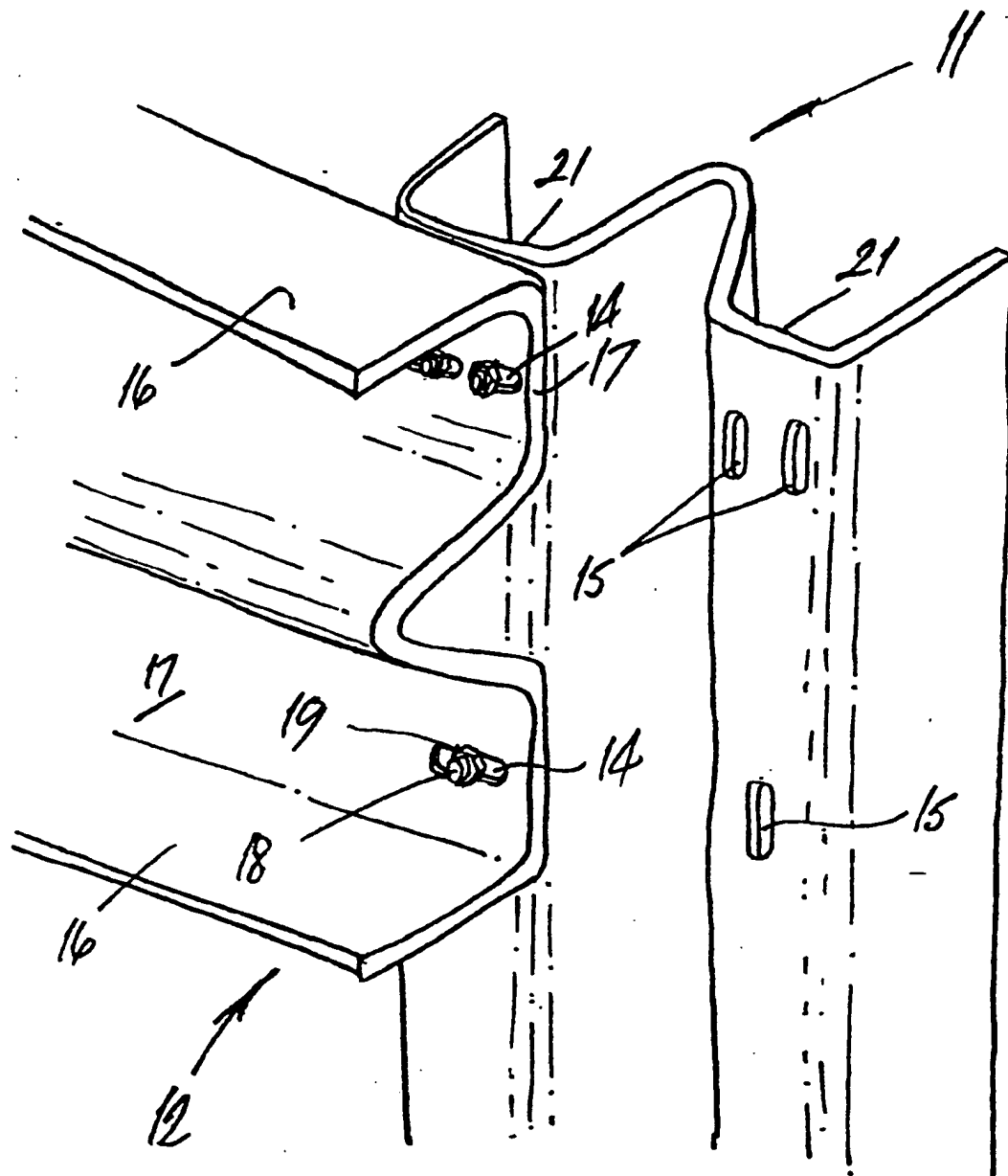


FIGURE 1

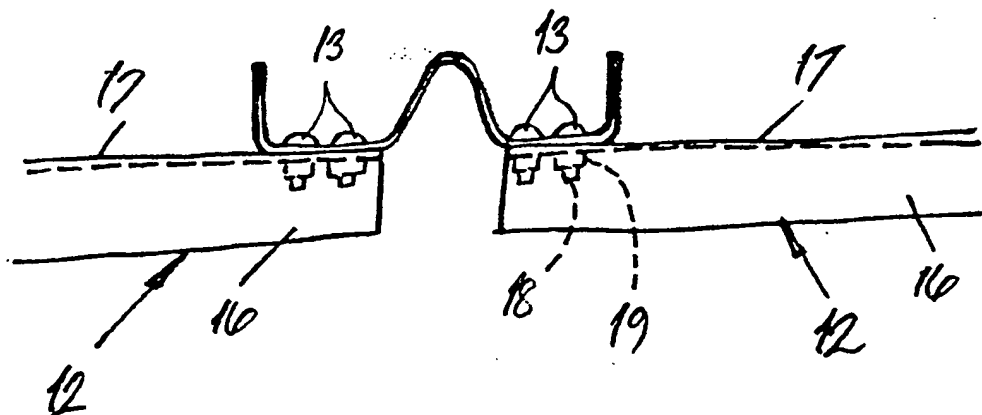


FIGURE 2

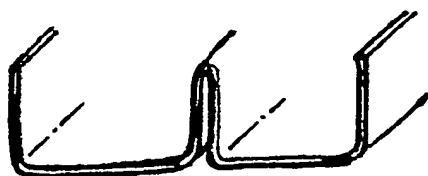


FIGURE 3

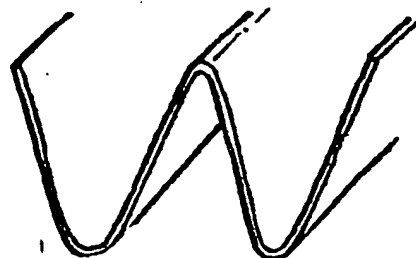


FIGURE 4

## SPECIFICATION

## Post and rail fencing

The invention relates to post and rail fencing.

Traditional post and rail fencing comprises

- 5 wooden rails fastened to wooden posts. Usually the fastening is done with nails. The posts may be oak, or another similarly hard wood, but the rails are almost always made of relatively inexpensive wood because of the amount of material they
- 10 require in comparison with the posts.

- Traditional wooden fencing has a number of drawbacks. The wood has to be protected against weather, either by creosoting or by priming and painting, and the need for repeated protection
- 15 years after year is an onerous one in terms of time and finance. Wooden rails, even when protected, are prone to warp in the cyclic weather changes experienced in this country. Wooden posts, even oak or other hardwood posts, tend to rot from
- 20 their base once the base has been driven into the ground, and eventually break. If the posts are set in concrete to try to prevent this, there is still the danger of them breaking because they have no resilience about their base, and setting posts in
- 25 concrete along any substantial length of fencing is almost always impractically expensive.

- As well as these drawbacks, wood in general has no great resistance to bending and will eventually split if it is repeatedly pushed by horses and similar strong animals. The need for
- 30 continuing repair and maintenance of wooden fencing is, in general, well known and needs no further elaboration.

- Attempts have been made to reinforce
- 35 traditional wooden fencing by, example, running lengths of barbed wire along the fence rails and fastening the wire to the rails. This is expensive, looks unsightly even when carefully done, and can injure animals.

- Attempts have also been made to substitute other materials for wood. For example, concrete posts may support tubular metal rails or may support rails consisting entirely of tensioned barbed wire. These are generally considered
- 40 unsightly, and again are considerably more expensive than wood. Also, ironically, the permanence of a concrete post is a drawback in most people's eyes.

- Modern plastics materials have been used for
- 50 post and rail fencing. They can look attractive in such situations as suburban front gardens. For large-scale use, however, they are far too expensive and they are also unacceptably flimsy and easily broken. Plastics materials share the
- 55 tendency of wood to warp in changing weather conditions.

- Wooden panel fencing, widely used to divide suburban back gardens, is not appropriate for use on the scale and in the circumstances in which
- 60 traditional post and rail fencing usually found. It is expensive, relatively easily damaged, and lacks altogether the visual appeal of an open post and rail fence.

According to the present invention, post and

- 65 rail fencing is characterised in that the posts and the rails are made from W-section lengths of channel and are joined by fastening the channels base-to-base.

- The channels can be extruded, moulded, or
- 70 pressed from any suitable material and manufactured in any convenient length. The posts and rails may all have the same cross-section, making for ease and economy of manufacture. The form of the section gives strength, and particularly resistance to buckling, to the posts and rails whilst still being acceptably neat in appearance and light in weight. The fencing may be fastened by bolting or even by spot-welding or other fusion processes, to give a strong taut line of fencing. The section
- 75 form gives to the posts a rigidity comparable with that of traditional wooden posts, but allows them to flex to a certain extent and so absorb stresses rather than breaking under them. The section form similarly enables the rails to resist buckling, as well as resisting warping under changing weather
- 80 conditions.

- The channels may be flat-based, rather than ridge-based (i.e. the two halves of each W may be U-shaped rather than V-shaped), to facilitate post-
- 85 to-rail fastening and to increase the strength of the fencing.

- The central region of material connecting the two halves of each W may define an inverted U or an inverted V (when viewing the section with the
- 90 W upright). The width of the base of the U, or the angle included between the sides of the V, can vary and can be chosen to suit appropriate circumstances requiring greater or lesser buckling resistance and depending on the finished
- 95 appearance which may be desired.

- Alternatively, that central region of material may define only a minimal included angle between the two halves of each W, to maximise the resistance of the channel to buckling about its
- 100 central region. This is especially advantageous when used in a channel section whose two W-halves are U-shaped as outlined above.

- In any fencing embodying the invention, the channel bases of the rails may face outward from the area bounded by the fencing. They then present a neater appearance when viewed, as they will usually be viewed, from the outside. They are also better positioned to resist attempted buckling
- 110 by any animals inside the fenced area.

- This question of the external appearance of the fencing is, of course, heavily influenced by the appearance of the rails because there is so much greater a length of rail than post to be seen.

- The fencing can be fastened together by bolting the channels base-to-base, and the W-section channels lend themselves ideally to shrouding the ends of the bolts. If the bolt ends do not project beyond the upstanding flanges of the W-sections, there is less chance of animals damaging
- 120 themselves on them. This last advantage becomes especially apparent when the bolt heads, like the rail channel bases, face outwards of the area bounded by the fencing, again to give a neat appearance to an onlooker. The bolt ends will

protrude inwards, but will be shrouded by the W-flanges.

In practical embodiments the fencing channels may be metal, and may be galvanised or otherwise protected. They can be primed and painted if desired. In general, they should weather better than similarly-painted wooden fencing.

Alternatively, the channels may be extruded, cast or moulded in a plastics material which can be self-coloured. Here again, plastics fencing embodying the invention is far less easily broken than existing plastic fencing, because unlike that existing fencing it makes no attempt to simulate wooden posts and rails.

One form of fencing embodying the invention is shown, by way of example only, in the accompanying drawings. It is currently the best way known to the applicant of putting the invention into practice. It will now be described with reference to those drawings, in which:

Figure 1 shows in perspective a post-to-rail joint;

Figure 2 shows the joint of Figure 1 when viewed in plan and with another rail in view;

Figure 3 shows a modified channel section for either a post or a rail; and

Figure 4 shows another modified section for a post or a rail.

In Figure 1, an upright elongate linear post 11 is set into the ground and is spanned by rails 12 which run generally horizontally in relation to the ground and which span the posts 11 at right angles. A succession of posts 11 is spanned by continuing lengths of rail 12 to form the form the usual lattice-pattern post and rail continuous fencing. The height of the fencing, and the number of rail runs, will be selected according to circumstances and need not be detailed here.

Each post 11 and each rail 12 is formed as a W-section length of channel. In this particular embodiment, the post channels and rail channels are identical, and are formed by shearing fourteen-gauge mild steel sheet into strips of appropriate width and then press-folding the sheet to form channels of the section illustrated.

These channel sections are flat-based, i.e. the two halves of each W are generally U-shaped. They are fastened base-to-base by domed-headed bolts 13 which pass through elongate slots 14 in the rail and 15 in the posts. The slots give a measure of adjustment to compensate for any unevenness in the setting of the posts. They could be cut into the channels before or after press-folding from the sheet.

The domed heads of the bolts 13, and the channel bases of the rails 12, face outwards from the area bounded by the fencing. The flanges 16 of the W-section rails 12 project at right angles from the flat bases 17 of the channels, and project far enough to shroud the ends 18 of the bolts 13.

Nuts 19 screw-thread on to the bolts 13 to cooperate with the bolts in fastening the posts and rails together. Washers, for example, spring washers, could fit over the bolts before the nuts are screwed on, but they are not illustrated.

As Figure 2 shows, successive rails 12 are each fastened to one of the flat bases 21 of each post 11, and a gap is left between successive rails. The post 11 masks the gap to an onlooker viewing from outside the fenced area. This ability to leave a gap between successive rails in the same overall rail length enables the user to minimise the amount of rail channel needed for any given fencing job.

Alternatively the successive rails 12 in any one rail length could be abutted, or could be overlapped if needs be. If they are overlapped, they could both be secured to the same channel base 21 by a single bolt or line of bolts 13, again depending on the circumstances and stresses to which a particular fencing installation might be subjected.

In the channel sections illustrated in Figures 1 and 2, the central region of material connecting the two U-halves of each W-section defines an inverted V (when viewing the section with the W upright, as in the post 11 of Figure 2). The included angle of that V is between 40° and 60°, for example 45°. Figure 3 shows an alternative section form, which could be used with posts or rails, in which the central region defines a minimal included angle between the two U-halves of the W-section. This section is exceptionally resistant to buckling about its central region. It also presents a particularly neat "solid" appearance when viewed with its channel bases facing outward.

The other alternative section illustrated in Figure 4 is ridge-based, i.e. the two halves of the W-section are V-shaped rather than U-shaped. This can have advantages. It will normally be cheaper to produce than the other channel sections illustrated, if the sections are being press-folded from initially flat sheet. It can also automatically prevent the heads of the bolts from turning when the nuts are being screwed tight to fasten the sections together. If hexagon-headed bolts are used, or domed-headed bolts with flats machined into them, the adjacent walls of each V-half of the section will grip the bolt heads.

If the channel bases face outwards from the fenced area, the rails are of course mounted on the inward surfaces of the posts. The fence is then better equipped to resist pressure against the rails from animals inside the fenced area.

Fencing posts extruded from plastics would be especially suited to open-plan suburban housing developments where post-and-rail fencing of relatively low height is used to demarcate the front plots of adjacent houses.

In some circumstances, fencing embodying the invention could support additional infill material below and/or between the or each channel-section rail length. For example, the posts could be drilled for horizontal runs of wire below a top channel-section rail.

The channel sections could be made from initially coiled strip, by feeding the strip, as it uncoils, first through a set of levelled rollers and then through a set of channel-forming rollers: and then cutting to length either before or after

stamping out any necessary fastening apertures.

#### CLAIMS

1. Post and rail fencing in which the posts and the rails comprise W-section lengths of channel adapted to be joined by fastening the channels base-to-base.
2. Post and rail fencing as claimed in claim 1, further comprising bolts to join the posts and rails together.
3. Post and rail fencing as claimed in claim 1, wherein the posts and the rails are joinable by spot welding.
4. Post and rail fencing as claimed in any one of the preceding claims, wherein the posts and the rails each comprise channel having the same W-section.
5. Post and rail fencing as claimed in any one of the preceding claims wherein the channel is flat-based.
6. Post and rail fencing as claimed in any one of claims 1 to 4, wherein the channel is ridge-based.
7. Post and rail fencing as claimed in any of the preceding claims, wherein a central region between the two halves of the W is generally U-shaped.
8. Post and rail fencing as claimed in claim 7 wherein the central region includes a minimal angle between the two halves of the W.
9. Post and rail fencing as claimed in any one of claims 1 to 6, wherein a central region between the two halves of the W is generally V-shaped.
10. Post and rail fencing substantially as described herein with reference to Figures 1 and 2, Figure 3 or Figure 4 of the accompanying drawings.
11. A method of making post and rail fencing comprising the step of extruding plastics material into W-section channel.
12. A method of making post and rail fencing comprising the steps of providing a length of metal strip, stamping out any necessary fastening apertures, and passing the strip through a set of W-shaped channel forming rollers, the steps being performed in any convenient order.
13. A method of making post and rail fencing as claimed in claim 12, comprising the additional preliminary steps of providing a coil of metal strip and feeding the strip through a set of levelling rollers.
14. A method of making post and rail fencing as claimed in either claim 12 or claim 13, comprising the additional step of cutting the strip to length either before or after the rolling step.
15. A method of making post and rail fencing substantially as described herein with reference to the accompanying drawings.